REMARKS:

Objection to Specification:

The Examiner stated that the specification did not provide support for the tool head being a "printing head" as set forth in claim 4.

This objection is not understood. Support is found in paragraph [0015], on page 5, lines 16 to 17 of the specification. Withdrawal of this objection is respectfully requested.

Objection to Claim 22:

Claim 22 has been amended to properly depend from claim 16, not claim 1, as suggested by the Examiner.

Section 102 and 103 Rejections:

The Examiner rejected claims 1, 3 to 11, 13 to 22 and 24 to 28 as being anticipated by Hosotani; and rejected claims 2, 12 and 23 as being obvious over Hosotani in view of Blais.

(a) The Presently Claimed Invention:

Independent claims 1, 16, 26 and 27 each set forth ***simultaneous*** viewing of the tool head and the component platform, as follows:

Claim 1:
.....an optical system positionable to ***simultaneously view*** the tool head and the component platform.

Claim 16:
.....while ***simultaneously viewing*** the positions of the tool head and the component platform .....

Claim 26:
..... an optical system which ***simultaneously views*** the positions of the tool head and the component platform.

Claim 27:
..... while ***simultaneously viewing*** the positions of the tool head and the component platform.

(b) The Hosotani System:

Hosotani describes a complex system for positional calibration of an electronic component for placement on a circuit board, as follows.

Hosotani's image recognition optical system 19 is shown in its Fig. 6. This system operates by taking separate, ***sequential*** images of the electronic component 13 (positioned above optical system 19) and the circuit board 16 (positioned below optical system 19). These separate images are taken by sequentially moving upper and lower shutters 419. (See Col. 10, lines 6 to 27). This sequential viewing approach of looking upwards at the electronic component, and then looking downwards at the component platform is typical and is seen in the prior art. (See. Col. 1, lines 48 to 54, describing Prior Art Fig. 17). As is stated at Col. 1, line 54, such sequential viewing is known as "switching fields of view".

Unfortunately, problems occur when switching between such upper and lower fields of view. Specifically, shifts in the optical axis between the upper and lower fields of view occur due to changes in the room temperate, or by heat from the apparatus itself. (See Col. 2, lines 29 to 38).

The Hosotani system is specifically directed to providing a system that compensates for such optical axis shifts in its optical image recognition system. This is done by obtaining a plurality of optical axis shift amounts, and then calculating a "calibration" optical axis shift (typically by simply averaging the plurality of optical axis shift amounts). (See Col. 4, line 56; and Col. 11, line 25). Moreover, as stated at Col. 11, lines 23 to 30, sequential ***back and forth switching*** between the two different fields of view ***a plurality of times*** is necessary since: "one time measurement would be greatly affected by the handling precision of the jig 21 so that the optical axis shift amount could not be measured with high precision". (Note: it is the position of glass jig 21 is specifically recognized by the optical system for determining the optical axis shift).

In summary, the Hosotani system operates by looking upwards at the electronic component and then downwards at the component platform. This operation is repeated a number of times such that a number of different optical axis shifts are measured, and thus can be averaged together to ensure a precise result.

(c) The Presently Claimed Invention Distinguished:

As explained above, the presently claimed invention provides ***simultaneous*** viewing of the tool head and the component platform. An important advantage of ***simultaneous*** viewing of the tool head (which holds the electronic component) and the component platform is that an operator sees these two images superimposed one over another. Since both the tool head and the component platform are moveable in X and Y directions, an

operator can very accurately (and very rapidly) position the tool head with respect to the component platform. Moreover, such operation can be carried out ***manually***. (See paragraph [0016] on page 5 of the specification). Such manual positioning is especially advantageous in that it avoids the need for small stepper motor positioning systems. For example, the Applicant's tool head 25 can be manually grabbed onto by an operator's hands and slid along rods 27 (in the X direction) and rods 28 (in the Y direction) for "coarse" positioning. (See Paragraph [0051] pages 13 and 14 of the specification). Similarly, component platform 35 can be easily moved in the X and Y directions by manually turning knobs 36 and 38, for "fine" positioning. (See Paragraph [0052] page 14 of the specification).

In contrast, small stepper motor positioning systems are found throughout the Hosotani system. At least four such stepper motors are seen in Fig. 8. Two such stepper motors are labeled as elements 340 (in Fig. 14) and 360 (in Fig. 15), respectively.

In conclusion, the presently claimed invention permits ***simultaneous*** viewing of the electronic component and the component platform, offering the advantages of a quick, simple, easy to operate manual positioning system. The Hosotani system does not permit ***simultaneous*** viewing of the electronic component and the component platform, as claimed. Rather, its images are electronically viewed after another, thus requiring complex image recognition and logical analysis systems, which in turn rely upon at least four stepper motors for positioning the component vis-a-vis the component platform.

In view of the forgoing, withdrawal of the present anticipation and obviousness rejections to the claims is respectively requested.

Respectfully submitted,

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